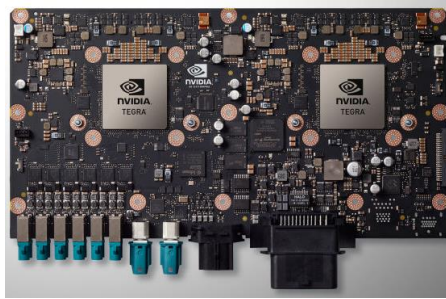
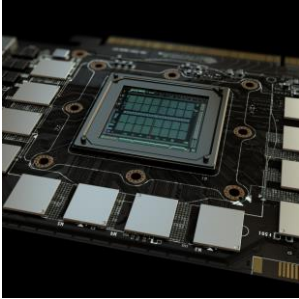


Winter 2017 EE260 (section 3) Advanced GPU Microarchitecture



Overview: General Purpose Graphical Processing Units (GPGPUs) are fast becoming the processing element of choice for various platforms, from supercomputers and cloud computing, to mobile devices and self-driving vehicles. GPGPUs provide order-of-magnitude energy efficiency and performance improvements over traditional CPUs. The massive parallelism of GPGPUs enable unprecedented performance when running modern complex and large-scale workloads, such as machine learning, computer vision, and scientific computing.

This course provides an in-depth exploration into microarchitecture challenges of designing highly efficient GPGPUs, with a focus on performance, energy efficiency, and reliability. The course will consist of paper reviews, presentations, and major projects. Literature will be derived from major computer architecture, and related areas, conferences.

Topics covered in this course includes:

- GPU parallel execution model
- Scheduling techniques for Warps and Thread blocks
- Handling warp/control divergence
- Cache/Memory architecture
- Energy efficiency techniques
- Reliability
- Simulation tools

Instructor: Daniel Wong (e-mail: dwong@ece.ucr.edu)

Class format: Seminar

Prerequisite: CS161 (or equivalent), CS/EE 217, or Consent of instructor.

Time: Tuesday and Thursday 8:10 – 9:30am

Location: MSE 003